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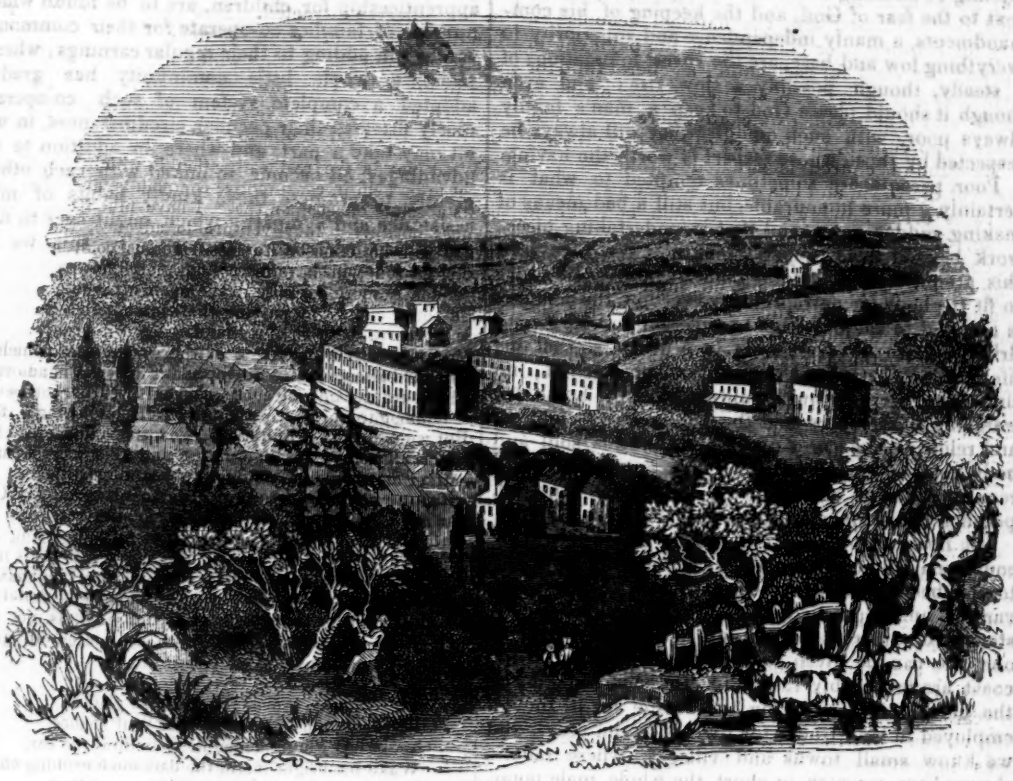
TORQUAY, DEVONSHIRE.



TORQUAY.

On the southern coast of Devonshire is situated a bay, remarkable for the beauty of the shore surrounding it. This is called *Torbay*, and constitutes a sheet of water nearly quadrangular, being about five miles broad from north to south, and about four miles in depth from east to west, the bay looking out directly eastward, and being overlooked on the north by Torquay, on the south by Brixham, and on the west by Paignton.

Torbay is deemed one of the finest roadsteads on the British coast. Vespasian is said to have landed here when he came over to attack Arviragus, king of Britain. William the Third entered Torbay, with his fleet under Admiral Herbert, and landed at Brixham, Nov. 4, 1688. At the period of the revolutionary war in France, Torbay became frequently a place of importance, from being a rendezvous of the British fleets; and at a subsequent period Bonaparte was brought a prisoner into Torbay, on board the Bellerophon, July 24, 1815.

The word "tor" which frequently occurs in Devon topography, was a Celtic name for a beacon or fire-tower, and became in time applied to the hills upon which the beacons were erected: such was the case with High Tor, South Brent Tor, Three-barrow Tor, Sharp Tor, Hamil Tor, and Tor-Mohun. Tor-Mohun is situated not far from Torquay, and gives its name to a small village, as well as to the parish which contains Torquay: this, then, is the circumstance which gives rise to the names of Torbay and Torquay. The manor of Tor-Mohun was originally called Tor-Brewer, from a distinquished family of that name, who possessed the manor in the time of William the Conqueror. By a marriage between the families of Brewer and Mohun, in the reign of Henry the Third, the manor acquired the title which it has ever since borne; and Torquay has gradually grown up in the manor.

Torquay is eminently calculated for a watering place where invalids can sojourn for the benefit of their health; and it has consequently acquired those conveniences which never fail to follow under such circumstances. There are two or three excellent hotels erected directly in front of the sea. A market was some years ago built by Sir L. V. Palk, Bart., in which is an abundant supply of meat, fish, poultry, vegetables, &c., on Tuesdays and Fridays: the fish, in particular, is good, abundant, and cheap, and is brought from Brixham, on the other side of the bay. There is an assembly room adjoining the Royal Hotel, in which balls, assemblies, public meetings, concerts, &c., are held. Besides two or three libraries, there is a book-society, and other means of extending literary amusement. At the extremity of the pier are situated the baths, erected by a medical practitioner of Torquay, who is their proprietor. The sea water ebbs and flows

with the tide, through the wall of the pier into a spacious reservoir, from whence it is pumped for use into the cisterns of the baths: by this arrangement, sea-water is procured freed from sea-weed and other impurities. Many institutions of a praiseworthy character have sprung up in Torquay; such as the Torquay Society for the Diffusion of Religious and Useful Knowledge; the Torquay Branch Association, in connexion with the Society for Educating the Poor of Newfoundland; the national schools, for the education of poor children on Dr. Bell's system; Sunday schools, not connected with the national schools; a society for clothing poor children, on the payment of one penny per week for each child; a general fund for the relief of the poor in case of sickness, losses, or severe distress; and others which we cannot here enumerate.

There is no church, properly so called, at Torquay; but Tor-Mohun church is situated within walking distance of the town, and has divine service performed in it twice every Sunday: it is a plain and simple building, about 70 feet long, by 42 wide, with two aisles communicating with a nave by four arches: the singing gallery bears the date 1760; and panels are ornamented with heraldic shields of some of the distinquished families who have lived near the spot: this church is a perpetual curacy. At Torquay is a chapel belong to the national establishment, being properly a chapel of ease to the parish church at Tor-Mohun, of which we have just been speaking; it is a plain, unornamented building.

It is chiefly the lovely situation of Torquay that has brought it into note; for there are but few other circumstances likely to give it eminence. The salubrity of the town arises from its peculiar position. It is completely sheltered, on the north-east and west, by hills of very considerable elevation, on the declivities of which are detached houses and terraces, some of them very handsome buildings; and the heights on which they are situated being richly clothed with wood, their appearance is very picturesque. About fifty years ago, Torquay was only an insignificant fishing village; but the beauty of its situation led to various improvements which have gradually converted it into a fashionable watering-place. The first of these improvements was the construction of a pier, for which an act of parliament was obtained, through the instrumentality of Sir L. V. Palk, to whom the town is otherwise indebted: the pier was commenced in 1804, and finished in 1807. Since that period, another pier has been constructed, by which a secure basin has been formed, 500 feet long and 300 broad. Torquay has a trifling share in the Newfoundland fishery, and possesses also a few coasting vessels.

In the neighbourhood of Torquay is a remarkable cavern, which has attracted a good deal of attention. This cavern, which is called Kent's Cavern, is about 500 feet in length, and stalactites are observed hanging from the roof in the most graceful forms; but what is of more importance in a scientific point of view, is, that organic remains of animals, belonging to species no longer existing in England, have been found here. Several scientific gentlemen in the neighbourhood drew attention to this circumstance, and afterwards Dr. Buckland visited the spot. The remains of the hyæna are very abundant; and there are numerous bones of the elephant, the rhinoceros, the elk, the tiger, and many smaller animals, particularly some belonging to the tribe *Rodentia*. A large number of teeth have been procured, in various stages of their growth. There seems to be reason for thinking that there are many other caverns yet undiscovered in the neighbourhood of Torquay.

The qualifications of Torquay, as a place of residence for invalids, have attracted the attention of physicians, one of whom, Dr. Clarke, has stated at some length his opinions on this point. According to him, the general character of the climate of this coast is soft and humid; but that Torquay is drier than most other places on the coast, and almost entirely free from fogs. This drier state of the atmosphere he attributes in part to the vicinity of lime-stone rocks, and partly from its position between the two streams, the Dart, and the Teign, by which the rain is in some degree attracted. Not only Torquay, but a beautiful tract of country near it, is completely sheltered from the cutting winds which are so dangerous to invalids. The mildness and softness of a south-western aspect are possessed by Torquay in a peculiar degree. Dr. Clarke observes:—

> What may be the real estimation in which the climate ought to be held in consumptive complaints, and what may be its absolute effect upon these, I have much difficulty in saying; but this I may venture to advance, that as the invalid will be exposed to less rigorous cold, and for a shorter season will have more hours of fine weather, and consequently more exercise in the open air; he gives himself a better chance by passing the winter here than in any more northern part of our island. To compare it also in this respect with the climate of the southern continent of Europe, is no easy task. In the south the invalid has finer days, and drier air, and more constant weather; but the transitions of temperature, though less frequent, are more considerable. In the night, I believe, invalids are often exposed to severer cold than here; and this arises partly from the great range of temperature, and partly from the imperfect manner they are protected from the cold at night, by the bad arrangement of the houses, chimneys, &c.

There is a very favourite excursion for persons residing in or visiting Torquay. This is to proceed from Torquay to Totness; then down the river Dart to Dartmouth; cross from Dartmouth to Brixham; and finally skirt the whole of Torbay from Brixham to Torquay. From Torquay to Totness is about ten miles. This last-mentioned place is of great antiquity, being celebrated from the time of the Roman invasion of Britain: it was formerly surrounded with walls, and had four gateways, the eastern and northern of which are still nearly entire. From Totness, pleasure-boats go down the river Dart to Dartmouth, a sea-port town of considerable importance. On the opposite side of the estuary of the Dart is the town of Kingswear; and from thence to Brixham is a distance of about two miles and half. Brixham is one of the most considerable fishing towns on the southern coast. Upwards of one thousand men and boys, and more than one hundred vessels, are employed here in the fishing and coasting trades, chiefly the former. Turbot, soles, plaice, whiting, mackerel, thornback, gurnet, flounders, and many other kinds of fish, are caught, and sent to the Exeter, Bath, Bristol, and London markets. The weekly returns from this trade alone are said frequently to amount to 1000*l.* per week: and it is probable that when the railway system is brought more completely into operation, the fishing trade will still further increase, on account of the facility of conveying the fish inland. About one quarter of the manor of Brixham belongs to some of the fishermen of the place. We said in a former paragraph that it was at Brixham that William the Third landed, in 1688. On that occasion a curious address was presented to him by the inhabitants in the following words:

> And please your Majesty King William,
> You're welcome to Brixham quay,
> To eat Buckhorn and drink tea
> Along with we,
> And please your Majesty King William.

The "buckhorn" here alluded to, is a provincial name for dried whiting,—whiting being a very abundant fish on the neighbouring coast.

Leaving the port of Brixham, we coast the bay, from thence to Paignton, a spot much celebrated for the fertility of its soil. The manor of Paignton belonged, before the Norman conquest, to the see of Exeter, and was a favourite resort of many of the bishops, who had a palace here: this palace is now in ruins, a short distance from the church, and completely covered with ivy. The church is a handsome edifice, with a fine Norman doorway.

From Paignton, a road leads through Tor-Mohun to Torquay, passing at the back of Tor-Abbey. This ancient building is now the seat of G. H. Carey, Esq., in whose family it has remained for nearly two centuries. The building consists of a centre and two wings, the western being connected with a castellated gateway, with octagonal towers and battlements. This was an old monastery founded by William Lord Brewer, in 1196; and was the best endowed monastery of the Augustine order in England. There was a regular succession of abbots from Adam, canon of Welbeck, who first settled here in 1196, to Simon Rede, the last abbot, who surrendered the revenues to Henry the Eighth, and received a pension of 66*l.* 13*s.* 4*d.* per annum.

GARDEN HERBS. IV.

Sage, (*Salvia.*)

Common garden sage is a hardy, well-known perennial plant, very full of stalks, four-square, and of a woody substance, with whitish, wrinkled leaves, which possess a peculiar but not unpleasing smell. At the top of the branches appear insignificant purplish flowers, in the place of which follow small black seeds, contained in husks. Sage was brought to this country from the south of Europe, about the year 1573, and soon became extensively cultivated. The family to which it belongs is a very large one, containing a great number of herbs and under-shrubs, which are found diffused over a large portion of the earth. Of these some are highly ornamental, and are ranked among our most beautiful greenhouse plants. They possess the advantage, in common with the humbler members of the same family, of being easily propagated by cuttings. There are also the meadow-sage, and the wild clary, common to our own soil; and in our gardens we frequently cultivate the variegated sage, thus spoken of by Gerard. "We have in our gardens a kind of sage, the leaves whereof are reddish; part of those red leaves are striped with white, others mixed with white, green, and red, even as Nature lists to play with such plants. This elegant variety is called *Salvia variegata elegans*, variegated, or painted sage."

Common sage has a powerful and fragrant smell, and a warm aromatic taste: it received its name of sage from the French word *sage* (wise,) on account of the property ascribed to it of strengthening the memory, and thus making people wise; while the name of *salvia*, applied to the whole genus, is derived from the word *salvus*, and denotes the healing properties of the herb.

It is curious to observe the various uses to which sage was applied in former days, and the low estimation in which it is held at the present time. *Then* it was recommended as a remedy for nearly all the diseases the flesh is heir to, so that it was said, "Why should a man die, while he has sage in his garden?" *now* we scarcely hear of it except as a seasoning for strong meats, sausages, ducks, &c.

Some of the medicinal uses of sage, according to the old writers, are the quickening of the senses and memory, the strengthening of sinews, restoring those who have the palsy, curing consumption, fortifying the nerves, removing tumours, &c., &c.

No one need doubt of the wholesomeness of sage-ale, (says Gerard,) being brewed as it should be with sage, scabious, betony, spikenard, squinanth, and fennel seeds. The leaves of red sage, (says the same writer,) put in a wooden dish, wherein is put very quicke coles, with some ashes in the bottome of the dish, to keep the same from burning, and a little vinegar sprinkled upon the leaves lying upon the coles, and so wrapped in a linen cloath, and holden very hot unto the side of those that are troubled with a very grievous stitch, taketh away the paine presently.

Culpeper recommends the juice of sage to be taken in warm water, for the relief of hoarseness and cough, and also prescribes it, together with other "hot and comfortable herbs," to be used in baths, for the comfort and restoration of cramped limbs. Orpheus says that three spoonsful of the juice of sage, taken fasting with a little honey, "doth presently stay the spitting of blood in them that are in a consumption:" we have likewise directions for making sage-pills, which are said to be of almost universal efficacy. The recipe is as follows:—"Take of the seed of sage toasted at the fire eight drachms; of spikenard and ginger, each two drachms; of long-pepper twelve drachms; reduce them to powder, and add enough sage-juice to make them of the proper consistency. Make them into pills, and take a drachm of them every night and morning."

The odour of sage, when inhaled for a considerable time, produces a feeling of intoxication. Dr. James tells us, that on examining this plant on an empty stomach, he found himself almost drunk with the smell of it. This herb, together with all the other species of sage, has something of the nature of the *Quercus*, or oak, and is therefore astringent and exciting to the nerves. Boerhaave affirms that persons who have for years together laboured under an infirmity or debility of the stomach, have received great benefit from taking the conserve of sage. The aromatic oil of sage is said to be good for rheumatic complaints. An infusion of the leaves in water is of a deep colour, similar to tea, and ink may be made with it, as well as with galls. In the Levant, large galls were seen by Tournefort, growing on the sage, which were caused by the punctures of insects; these galls are firm, fleshy, semi-transparent tumours, swelling out from the branches of the plant, and supposed to be produced in the same manner as oak-apples, by the puncture of an insect of the *Cynips* genus. They form an article of ordinary sale in the markets, and are called sage-apples. When preserved with sugar, these apples are regarded as a great delicacy. Dr Clarke was regaled with them by the English consul, at the island of Syros, and speaks highly of their excellent flavour. The plant which is subject to these excrescences is much larger than the common sage, and has a more powerful smell. It grows abundantly in several of the Greek islands, and attains the size of a small shrub.

Sage tea has been used as a gargle for the mouth and throat, and is said to preserve the gums from scorbutic complaints, and to fasten loose teeth.

Sage cheese was formerly held in high esteem, but is now comparatively rare. For a cheese of the ordinary size weighing from eight to twelve pounds, two good handsful of green sage, half a handful of parsley, and half a handful of marigold leaves were bruised and infused all night in a sufficient quantity of milk, to extract their colour. This coloured milk was mixed with about a third part of the milk intended for curding, and the milk thus coloured was

kept separate from the rest during the processes of coagulation, draining, scalding, &c. When the pure curd and the green curd were each minutely broken up and ready to be put into the vat, the dairy-woman formed the green curd into regular designs, or blended it with the white, according to her own fancy. Tin or wooden moulds are sometimes made use of in forming the pattern. In Gloucestershire this sort of cheese is still made, and the concluding process is as follows. When the curd is to be put into the vat, the designs, or pieces of green curd are placed first at the bottom. The white curd is then crumbled over and between them. As the vat fills, the pattern is formed at the sides in green curd, and lastly at the top, when the cheese is subjected to the usual pressure.

The dried leaves of sage are so highly esteemed by the Chinese, as a substitute for tea, that they have frequently expressed astonishment at the taste of Europeans, in preferring the product of the tea-plant, and taking such long voyages to procure it, when they have a herb of such superior flavour in their own country. The Dutch traders have long been in the habit, therefore, of transmitting to China great quantities of sage in a dried state, the growth of their own country, and also of the south of France; this they send out in cases, and get in exchange for every pound of sage, four pounds of tea.

Sage may be raised from seed or from slips. When dried for winter use, it should be cut before it comes into blossom; this should be observed also with respect to the other herbs.

ON PROPORTIONAL COMPASSES.

THE word *compass* has many significations, even if we confine its use to instruments employed for scientific purposes. For instance, there is the mariner's steering-compass, that invaluable piece of magnetised steel, which enables him to determine towards what quarter of the horizon he his steering his ship. There is the azimuth-compass, employed in nautical astronomy as a check upon the steering-compass; as well as pocket-compasses, which give a proximate intimation to land-travellers, of the way in which they are travelling. All these owe their efficacy to the fact of the *poles* or extremities of a magnet being attracted towards certain spots in the northern and southern hemisphere of the earth.

But the word *compass*, or *compasses*, used with reference to drawing, geometry, perspective, and such like sciences, refers to a very different kind of instrument; such as is used to take the *compass* or dimensions of a line, superfices, or solid; and of these there are various sorts. The *common compasses* consist of two sharp-pointed branches or legs of iron or brass, with a convenience for replacing one of these legs with another, containing a pen or a pencil-case. *Triangular compasses* have an extra leg, and are employed to take three points at once. *Beam-compasses* consist of a long beam or branch, carrying two brass cursors or sliders, to which may be fixed a pencil, pen, &c. These are for the purpose of drawing large arcs, and taking off divisions with great exactness. *Clockmaker's compasses* are joined like the common compasses, with a quadrant or bow so adjusted, as to keep the instrument firm at any degree of opening. *Cylindrical and spherical compasses* consist of four branches joined in a centre, two of which are circular, and two flat, a little bent on the ends: their use is to take the diameter or thickness of round bodies, such as cannons, pipes, &c. *Elliptic compasses* are an ingenious contrivance for drawing an ellipse. *Spring-compasses* have a stout spring to keep them open at any desired point. PROPORTIONAL *compasses*, a contrivance for performing certain problems in proportion. It is to this last that we shall direct our attention.

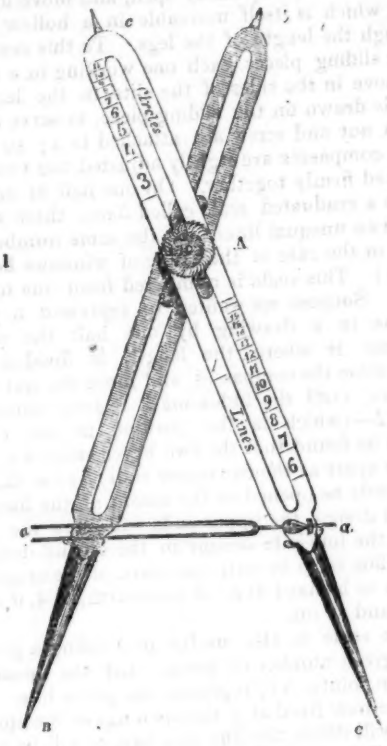


Fig. 1

Proportional compasses are intended for the performance of what we may perhaps call "practical arithmetic." For instance; suppose a draughtsman were copying a drawing on a reduced scale, and that, in the original there was a range of twenty windows occupying a space of seven inches, and that he wished to represent the same range within a space of three inches. It would be tedious to make the corresponding calculation by arithmetic (that is, $\frac{3}{20}$ of seven inches, and $\frac{3}{20}$ of three inches), and then estimate the ascertained distance by a common rule divided into feet and inches: such a plan would be neither easy nor expeditious. But with the proportional compasses it could be effected with much ease. Again, suppose we wished to divide the circumference of a circle into seven equal parts, or, which amounts to the same thing to inscribe a polygon of seven sides within the circle. To effect this by common methods, we must see how many degrees are included in an arc of a circle equal to one seventh of the whole circumference: this is a fractional number between fifty-one and fifty-two: we then, by means of a protractor, or some similar graduated instrument, lay off that distance seven times in succession, by which we obtain seven equidistant points in the circumference of the circle. But with the proportional compasses, this complex process is much shortened. There are also other purposes which this instrument answers; but of these we shall speak presently: what we have already said will show that there is much practical utility in the instrument.

Proportional compasses differ from the common compasses in having the joint *between* or midway, instead of at one end of each leg, and also in having the joint moveable to any different distances from either end. On one of the two elliptical legs are marked certain scales, which appear in fig. 1. The

compasses consist of these two legs of brass, each having points of steel at both extremities; and these legs, when closed, lie upon each other so nicely as to appear but one. They easily open, and move upon a centre A, which is itself moveable in a hollow canal cut through the length of the legs. To this centre is fixed two sliding pieces, each one working in a dove-tailed groove in the sides of the slits in the legs: a fine line is drawn on the sliding piece, to serve as an index. A nut and screw are attached to A; so that when the compasses are rightly adjusted, the two legs can be fixed firmly together. On one half of one of the legs is a graduated scale called *lines:* these serve to divide two unequal lines into the same number of parts, (as in the case of the range of windows before alluded to.) This scale is numbered from one to ten or twelve. Suppose we wanted to represent a particular line in a drawing by one half the same length—that is where the length is divided by two. We close the compasses, and move the nut and sliding-piece, until the index-mark exactly coincides with fig. 2—(which is the position in our cut). It will now be found that the two lower ends, B C, are *twice* as far apart as the two upper ends, *b c*; so that if the lower ends be opened to the extent of the line in the original design, the upper ends will show the extent which the line is to occupy in the second design. If the new line is to be only one third of the original, the screw is to be fixed at 3: if one fourth, at 4, if one fifth, at 5, and so on.

The same scale is also useful in dividing a given line into a given number of parts. Let the opening of the lower points, B C, represent the given line. If the screw be now fixed at 2, the openings of the upper points, *b c*, will divide the line into two, or will be half the length of the given line: if at 3, it will divide the given line into three parts; if at 4, into four parts, and so on for the others. The cross-piece, *a a*, is intended to facilitate the *fixing* of the legs at any required opening. Before moving the joint, A, to a fresh division on the scale, the legs of the compasses must be re-laid one upon the other. There is a nick at the lower parts of the brass ellipses, which serves to show when the legs coincide.

It will now be seen that the principle on which this instrument acts in the case of lines, is that of similar triangles, where the bases are to each other as their sides. In figure E (fig. 2.) the joint, A, in fig. 1 is supposed to be at the centre, thereby making the triangles equal and similar; but in the next figure the joint, A, is higher up, and makes the triangles only similar, and the base, B A, only a certain part of the base, D C.

Fig. 2.

Another scale, usually marked on one of the legs, is called a scale of *circles*, or of polygons, the intention of which is to facilitate the division of a circle, or rather the circumference of a circle, into any number of equal parts. This scale is usually marked from six to about eighteen or twenty, and enables a draughtsman to inscribe within a moderate-sized circle a polygon of any number of sides from six to twenty. The principle on which the graduations on this scale are made, depends on the proportion between the *radius* of a circle, and the length of the side of a polygon inscribed within that circle. As the number of sides in the polygon increases, so does the length of the side decrease; the degree on the scale, therefore, at which we must fix the index attached to the central screw, depends upon the number of sides contained in the polygon which we desire to inscribe within a given circle. We have, therefore, to take the *radius* of the circle in one end of the compasses, when we have fixed the screw at the particular number which represents the number of sides in the required polygon; and, in the other end, we obtain the *length* of each side of the polygon. Having once obtained this length, its application is easy.

Another scale, frequently engraved on proportional compasses, is the scale of *areas* or *superficies*. This scale is constructed on the principle, that similar areas are to each other as the squares of their like sides. If, therefore, the index attached to the screw be placed against the figure 2 in the scale of areas, the distance between the upper, or least open points, will be the side of a plane whose area is 1; while the distance of the lower, or most open point, will be like the side of a plane whose area is 2. If the index be placed at 3, 4, 5, &c., on the scale of areas, the wider points will be at a distance representing the side of a plane whose area is 3, 4, 5, &c., while the upper points will be at a distance respecting the like side of a plane whose area is 1.

Sometimes also this sort of compasses is provided with a scale of *solids* or *cubic contents*, constructed on this principle,—that all solids are to each other as the cubes of their sides or diameter. If, therefore, the index be fixed at 2 on the scale of solids, the small opening of the compass will be equal to the side of a solid whose cubic content is 1, and the large opening of the compasses equal to the side of a solid whose contents equal 2; and so on for other proportions. The application of this scale need not be confined to figures of a cubical or parallelopipedon form; it may also apply to *spheres*. Suppose we have a spherical bullet which weighs one ounce, and we want to ascertain what must be the diameter of a bullet which would weigh ten ounces:—We make the smaller opening of the compasses equal to the diameter of the smaller bullet: we fix the index at the figure 10 on the scale of solids; and we now find that the larger opening of the compasses is equal to the diameter of a bullet which would weigh ten ounces, provided it were made of the same material as the smaller bullet; because the weight would obviously increase in the same proportion as the amount of solid matter increased, that matter remaining of the same kind.

There are some proportional compasses so graduated as to assist in the performance of many trigonometrical operations. They are therefore provided with scales of *lines, chords, sines, tangents,* and *secants*. But in all these instances, a mode of adjusting the instrument is employed, similar to that which we have already described. The index or screw is set to the number of degrees, &c., in the given quantity: the opening at one end is adjusted to the given radius, and the opening at the other end gives the required dimensions of the chord, sine, tangent, secant, &c., of the given angle.

Since the adoption of that useful little instrument called the *sector*, the proportional compasses have not been so much employed as formerly, in performing questions in trigonometry.

It is certainly a great disparagement to virtue, and learning itself, that those very things which only make men useful in the world, should incline them to leave it. This ought never to be allowed to good men, unless the bad had the same moderation, and were willing to follow them into the wilderness. But if one shall contend to get out of employment, while the other strives to get into it, the affairs of mankind are like to be in so ill a posture, that even the good men themselves will hardly be able to enjoy their very retreat in security.—*Life of Cowley.*

ANECDOTES OF A TAMED PANTHER.

By Mrs. Bowditch.

I am induced to send you some account of a panther which was in my possession for several months. He and another were found when very young in the forest, apparently deserted by their mother. They were taken to the king of Ashantee, in whose palace they lived several weeks, when my hero, being much larger than his companion, suffocated him in a fit of romping, and was then sent to Mr. Hutchison, the resident left by Mr. Bowditch at Coomassie. This gentleman, observing that the animal was very docile, took pains to tame him, and in a great measure succeeded. When he was about a year old, Mr Hutchison returned to Cape Coast, and had him led through the country by a chain, occasionally letting him loose when eating was going forward, when he would sit by his master's side, and receive his share with comparative gentleness. Once or twice he purloined a fowl, but easily gave it up to Mr. Hutchison, on being allowed a portion of something else. The day of his arrival he was placed in a small court leading to the private rooms of the governor, and after dinner was led by a thin cord into the room, where he received our salutations with some degree of roughness, but with perfect good-humour. On the least encouragement he laid his paws upon our shoulders, rubbed his head upon us, and his teeth and claws having been filed, there was no danger of tearing our clothes. He was kept, in the above court for a week or two, and evinced no ferocity, except when one of the servants tried to pull his food from him; he then caught the offender by the leg, and tore out a piece of flesh, but he never seemed to owe him any ill-will afterwards. He one morning broke his cord, and, the cry being given, the castle gates were shut, and a chace commenced. After leading his pursuers two or three times round the ramparts, and knocking over a few children by bouncing against them, he suffered himself to be caught, and led quietly back to his quarters, under one of the guns of the fortress.

By degrees the fear of him subsided, and orders having been given to the sentinels to prevent his escape through the gates, he was left at liberty to go where he pleased, and a boy was appointed to prevent him from intruding into the apartments of the officers. His keeper, however, generally passed his watch in sleeping; and Saï, as the panther was called, after the royal giver, roamed at large. On one occasion he found his servant sitting on the step of a door, upright, but fast asleep, when he lifted his paw, gave him a blow on the side of the head which laid flat, and then stood wagging his tail, as if enjoying the mischief he had committed. He became exceedingly attached to the governor, and followed him every where like a dog. His favourite station was at a window of the sitting room, which overlooked the whole town; there, standing on his hind legs, his fore-paws resting on the ledge of the window, and his chin laid between them, he appeared to amuse himself with what was passing beneath. The children also stood with him at the window; and one day, finding his presence an incumbrance, and that they could not get their chairs close, they used their united efforts to pull him down by the tail. He one morning missed the governor, who was settling a dispute in the hall, and who being surrounded by black people, was hidden from the view of his favourite. Saï wandered with a dejected look to various parts of the fortress in search of him; and, while absent on this errand the audience ceased, the governor returned to his private rooms, and seated himself at a table to write. Presently he heard a heavy step coming up the stairs, and, raising his eyes to the open door, he beheld Saï. At that moment he gave himself up for lost, for Saï immediately sprang from the door on to his neck. Instead, however, of devouring him, he laid his head close to the governor's, rubbed his cheek upon his shoulder, wagged his tail, and tried to evince his happiness. Occasionally, however, the panther caused a little alarm to the other inmates of the castle, and the poor woman who swept the floors, or, to speak technically, the *pra-pra* woman, was made ill by her fright. She was one day sweeping the boards of the great hall with a short broom, and in an attitude nearly approaching to all-fours, and Saï, who was hidden under one of the sofas, suddenly leaped upon her back, where he stood in triumph. She screamed so violently as to summon the other servants, but they, seeing the panther, as they thought in the act of swallowing her, one and all scampered off as quickly as possible; nor was she released till the governor, who heard the noise, came to her assistance. Strangers were naturally uncomfortable when they saw so powerful a beast at perfect liberty, and many were the ridiculous scenes which took place, they not liking to own their alarm, yet perfectly unable to retain their composure in his presence.

This interesting animal was well fed twice every day, but never given any thing with life in it. He stood about two feet high, and was of a dark yellow colour, thickly spotted with black rosettes, and from the good feeding and the care taken to clean him, his skin shone like silk. The expression of his countenance was very animated and good tempered, and he was particularly gentle to children; he would lie down on the mats by their side when they slept, and even the infant shared his caresses, and remained unhurt. During the period of his residence at Cape Coast, I was much occupied by making arrangements for my departure from Africa, but generally visited my future companion every day, and we in consequence became great friends before we sailed. He was conveyed on board the vessel in a large wooden cage, thickly barred in the front with iron. Even this confinement was not deemed a sufficient protection by the canoe men*, who were so alarmed at taking him from the shore to the vessel, that, in their confusion, they dropped cage and all into the sea. For a few minutes I gave up my poor panther as lost, but some sailors jumped into a boat belonging to the vessel, and dragged him out in safety. The beast himself seemed himself completely subdued by his ducking, and as no one dared to open his cage to dry it, he rolled himself up in one corner, nor roused himself till after an interval of some days, when he recognised my voice. When I first spoke, he raised his head, held it on one side, then on the other to listen; and when I came fully into his view, he jumped on his legs, and appeared frantic; he rolled himself over and over, he howled, he opened his enormous jaws and cried, and seemed as if he would have torn his cage to pieces. However, as his violence subsided, he contented himself with thrusting his paws and nose through the bars of the cage, to receive my caresses. I suspect that he had suffered from sea sickness, as he had apparently loathed all food; but, after this period, he eat every thing that was given to him.

The greatest treat that I could bestow upon my favourite was lavender water. Mr. Hutchison had told me that, on the way from Ashantee, he drew a

* The panther in these countries is a sacred, or Fetish animal; and not only a heavy fine is extorted from those who kill one, but the Fetish is supposed to revenge his death by cursing the offender.

scented handkerchief from his pocket, which was immediately seized on by the panther, who reduced it to atoms; nor could he venture to open a bottle of perfume when the animal was near, he was so eager to enjoy it. I indulged him twice a week by making a cup of stiff paper, pouring a little lavender water into it, and giving it to him through the bars of his cage: he would drag it to him with great eagerness, roll himself over it, nor rest till the smell had evaporated. By this I taught him to put out his paws without showing his nails, always refusing the lavender water till he had drawn them back again; and in a short time, he never, on any occasion, protruded his claws when offering me his paw.

We lay eight weeks in the river Gaboon, where he had plenty of excellent food, but was never suffered to leave his cage, on account of the deck being always filled with black strangers, to whom he had a very decided aversion, although he was perfectly reconciled to white people. His indignation, however, was constantly excited by the pigs, when they were suffered to run past his cage; and the sight of one of the monkeys put him in a complete fury. While at anchor in the before-mentioned river, an ourang-outang (*Simia satyrus*) was brought for sale, and lived three days on board; and I shall never forget the uncontrollable rage of the one, or the agony of the other, at this meeting. The ourang was about three feet high, and very powerful in proportion to his size; so that when he fled with extraordinary rapidity from the panther to the further end of the deck neither men nor things remained upright when they opposed his progress: there he took refuge in a sail, and although generally obedient to the voice of his master, force was necessary to make him quit the shelter of its folds. As to the panther, his back rose in an arch, his tail was elevated and perfectly stiff, his eyes flashed, and, as he howled, he showed his huge teeth; then, as if forgetting the bars before him, he tried to spring on the ourang to tear him to atoms. It was long before he recovered his tranquillity; day and night he appeared to be on the listen; and the approach of a large monkey we had on board, or the intrusion of a black man, brought a return of his agitation.

We at length sailed for England, with an ample supply of provisions; but, unhappily, we were boarded by pirates during the voyage, and nearly reduced to starvation. My panther must have perished had it not been for a collection of more than three hundred parrots with which we sailed from the river, and which died very fast while we were in the north-west trades. Saï's allowance was one per diem, but this was so scanty a pittance that he became ravenous, and had not patience to pick all the feathers off before he commenced his meal. The consequence was that he became very ill, and refused even this small quantity of food. Those around tried to persuade me that he suffered from the colder climate; but his dry nose and paws convinced me that he was feverish, and I had him taken out of his cage; when, instead of jumping about and enjoying his liberty, he lay down, and rested his head upon my feet. I then made him three pills, each containing two grains of calomel. The boy who had the charge of him, and who was much attached to him, held his jaws open, and I pushed the medicine down his throat. Early the next morning I went to visit my patient, and found his guard sleeping in the cage with him; and having administered a further dose to the invalid, I had the satisfaction of seeing him perfectly cured by the evening. On the arrival of the vessel in the London Docks, Saï was taken ashore, and presented to the Duchess of York, who placed him in Exeter Change, to be taken care of, till she herself went to Oatlands. He remained there for some weeks, and was suffered to roam about the greater part of the day without any restraint. On the morning previous to the Duchess's departure from town, she went to visit her new pet, played with him, and admired his healthy appearance and gentle deportment. In the evening, when Her Royal Highness's coachman went to take him away, he was dead, in consequence of an inflammation on his lungs. —*Magazine of Natural History.*

ON THE MANUFACTURE OF SHOT.

It would frequently excite surprise, were we to reflect for a moment on the vast extent of the manufactory, or the intricacy of the machinery, concerned in the making of a simple article. To manufacture a pin or a needle, for instance, requires a succession of processes, the vastness of which can only be appreciated by those who have attended closely to the subject: and the same may be said of a variety of familiar objects which we have in daily use All this is a necessary consequence of the large demand for such articles. So long as human ingenuity is left unshackled, and persons possessing either capital, or a power of labour, are allowed to lay out their wealth to the greatest advantage, so long shall we see a successive train of improvement in the modes of producing manufactured articles.

We have been led to make these remarks by considering the very costly buildings which are, in our own day, appropriated to the manufacture of those apparently simple and trifling articles, *leaden shot*.

The purposes to which shot are applied are too well known to need any remark from us; but the mode of manufacture has gone through many different stages of improvement. One mode of making shot in former times was by rolling. Sheet-lead was cut into narrow strips, and these strips were cut, by a knife or some other instrument, into little cubes. Several hundreds of these cubes of lead were then placed on a flat stone, and another stone laid upon them: by working about the upper stone in every direction, the bits of lead gradually acquired a nearly spherical form, and if the stones were well polished, the shot would have a gloss imparted to them.

Another mode of making shot was by shaking together a number of the small cubical pieces of lead: by rubbing against one another, the angular projections were rubbed off, and a kind of sphericity produced, in the same manner as boys' stone-marbles are made. A rough mode of making shot by shaking, is described by a recent writer:—

> We recollect this method being turned to ingenious account by two country forgemen, who were in the habit of shooting great numbers of the wild ducks, which frequented the mill-dam. The men used, in the first place, to cut up the lead into angular bits of the desired size; these they put into an oblong can of sheet-iron, which they fastened to the head of the forge-hammer; the latter, by its motion, violently shook the contents of the can, up and down, until the bits within, striking against each other in every direction, soon became a very efficient, though not a very handsome, sort of duck-shot.

A more efficient mode of manufacturing shot is however by *casting*, since a more perfect sphericity can be obtained by such means. The mode of proceeding is as follows:—A pair of moulds consists of two side-pieces of brass, about ten inches long, and hinged together at one end, somewhat on the principle of a pair of nut crackers. Hemispherical cavities are made in those two faces of the side-pieces which join

one another when the mould is closed; so that, when closed, a complete spherical cavity is formed, to which a small opening conducts from without. When the mould is closed, a perforated plate is placed above the small openings, so that when melted lead is poured into the perforations of the plate, it flows through the small openings into the spherical cavities within the mould; and by a subsequent adjustment of the mould, the little pieces of lead attached to the shot are cut off, and the shot removed from the mould in a spherical form.

But this process is necessarily a slow one; and where large quantities of shot are required, it would obviously be desirable to have a quicker mode of proceeding. This has been accomplished in the method of manufacture now generally employed; a method which is remarkable not only for the details of which it consists, but for some circumstances connected with the invention and the inventor:—we allude to the method of *granulation*.

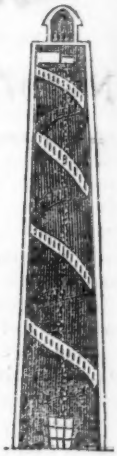
A plumber of the name of Watts, residing in Bristol in the year 1782, obtained a patent for the manufacture of shot by a mode which is said to have been suggested to his mind in a dream; this mode was to pour melted lead from a considerable height, so that, in falling, it should cool into separate globules or shot. He made an experiment from the tower of the church of St. Mary Redcliffe, at Bristol, which was satisfactory. He afterwards succeeded in disposing of his patent to the firm of Walker, Maltby, and Co., for 10,000*l*., and with this sum he projected the formation of a crescent on so grand a scale, at Clifton, that he spent the whole of the money in making excavations and foundation-walls, which afterwards obtained the expressive name of "Watts's Folly."

The mode of making shot invented by Watts has been acted on with some variation to our own day, and there are, on the southern banks of the Thames, several shot manufactories of a great height. The process of making the shot we may now describe. The substance employed is not pure lead, as every ton of it contains forty pounds of arsenic, the latter metal being employed to give hardness to the lead; but since there is an objection to *poisoned shot*, mercury is sometimes substituted for arsenic, and is said to answer tolerably well. These materials are cast into *pigs*, each weighing about one hundred weight and a half. Ten of these pigs are carried up to the top of the shot tower, or manufactory, into the melting-room. They are then put into a caldron, which is heated from beneath by a furnace. When the metal is melted, it is ladled out of the caldron, and poured into an iron vessel, somewhat resembling the common kitchen *colander*, the bottom being pierced with small holes, the same size as the shot which are to be made. The metal is not poured directly on the bottom of the vessel, but a little scoria or dross is first poured in, by which the liquid metal is somewhat cooled, before it reaches the holes. The metal passes through the holes in separate portions, hangs for a moment at the lower surface, and then drops; and this constantly going on from all the holes, an appearance like a shower of silver rain is produced.

After the drops have passed through the colander, they fall perpendicularly through about one hundred and thirty feet of space, into a receptacle filled with water, by which time they become solid, and soon afterwards cold.

The engraving represents a section of a patent shot tower: the melting-room at the top of this building is reached by a substantial stair-case of cast-iron.

When the shot are removed from the water, they are scattered over a large heated, iron plate, which has a furnace beneath: they are stirred about until well dried, and then removed. They then present a dead white silvery appearance; and the next process which they undergo is to be placed in sifters, to remove the imperfect ones. The sifters or sieves are set in motion by machinery connected with a steam-engine. The shot are first thrown into one sieve, the meshes of which admit all beneath a certain size to pass through. Those remaining are then turned out into a second sieve, the meshes of which will receive all those which are properly made, and will only reject those of a large or irregular form: these last mentioned are of no use, and are taken back again to be re-melted: while those which have passed through the two sieves are retained.



But although they may all be within the proper dimensions, yet it may happen that some of them are irregular and misshapen; they have therefore to undergo another kind of separation; and the plan adopted is a very remarkable one. There are a number of shallow trays wider at one end than the other; these are suspended by strings at the wide end, and rest upon shot bins at the other. "Thus arranged, a boy, who manages two of these trays, throws upon each at the widest end, (that nearest to him,) a small measure-full of shot; he then takes hold of the trays, and giving them a gentle vibrating motion laterally, and at the same time raising the ends a little, to give them a slight inclination, the shot roll about, tending from side to side, those that are perfectly spherical making their way quickly off the board into the bin at their extremity; while those which are imperfect are detained by their comparatively sluggish movements, and being thus separated from the good, the trays are pushed forward about a foot, and their contents emptied into other bins, placed beyond those containing the good shot, as before mentioned. This operation is so effectual that it is difficult to pick an imperfect shot out of those that come to market. Four or five boys thus employed, with two trays to each, suffice for a manufactory of the kind above described, which makes about five tons per day. The smallest shot require the utmost care and gentlest management of the inclined plane; therefore the eldest or steadiest hands are selected to operate on them."

After this selection is made, the shot are polished. To effect this, a cast-iron barrel, holding perhaps half a ton weight, is nearly filled with shot, and a rotatory motion is communicated to it by a steam-engine: this causes all the shot to rub against and round one another, by which their surfaces acquire a blackish lustre, very different from the whitish appearance before observed. Finally the shot are placed in bags, ready for sale.

The diameters of shot vary from a quarter to about one thirtieth of an inch, by twelve regular gradations; the largest, or No. 1, being called *swan*-shot, and the smallest, or No. 12, *dust*-shot.

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